

of beginning and ending of rainfall, and the temperature and pressure of the air. With one or two exceptions, the stations that are not at present so equipped are of slight importance or, in general, have all the instruments necessary for the satisfactory performance of their work. One hundred and fifty-nine steel towers, with the improved auxiliary equipment for the display of storm warnings, are now installed at as many stations distributed over the shores of the Great Lakes and the Atlantic and Pacific seacoasts. At 77 of these stations high-power electric lanterns are used, and at the others improved oil lights.

AN HONEST LONG-RANGE FORECASTER.

In the MONTHLY WEATHER REVIEW for July, 1904, page 322, under the title "Fake Forecasts," we have expressed our remonstrance against the publication of long-range weather forecasts that pander to the desire of the managing editor of a newspaper for sensational headlines, irrespective of reliability or public welfare. No principles known to conservative, reliable meteorologists warrant the publication of long-range forecasts of the details of local weather. We were very sorry to include in our list of offenders the name of one who has published some good contributions to meteorology; one who has been a close student of the weather map, but who was unwittingly drawn into an attempt to make long-range predictions on a very slender basis and at a very great risk to the good name of science. "Science" is a term that can only be properly applied to facts, observations, principles, and conclusions that are recognized by the world of scholars as acceptable to all because well-founded and generally unchallenged. No one man's hypotheses, deductions, generalizations, discoveries, or theories form a part of the body of "science" until they have been fully published and have stood the test of public discussion. The scientific literature of the past two hundred years, and even of the past fifty years embraces hundreds and thousands of papers that have long since lost whatever importance they once had; in fact both societies and journals are on their guard against publishing that which is useless, to say nothing of being absurd and injurious. Science is conservative, not sensational. Those who publish their ideas first in newspapers, as though afraid to stand the racket of a quiz by their colleagues in the established societies or journals of science, are liable to deceive themselves, mislead the public, and finally come to grief themselves. But we are pleased to find that our friend had committed only the error of an enthusiastic but honest man, and we take great pleasure in publishing the following letter, in which he sets himself right before his fellow citizens and colleagues.—C. A.

NORTHFIELD, MASS., November 11, 1904.

EDITOR MONTHLY WEATHER REVIEW.

DEAR SIR: It has been brought to my attention that in a recent number of the MONTHLY WEATHER REVIEW I am classed among long-range forecasters who work "against all recognized principles of meteorology." As nothing could be further from the truth, and as I have done no work of a forecasting nature for many months, I should like to correct such a view, for I am diametrically opposed to all such humbuggery, and utterly fail to comprehend where such an opinion had its inception. The only long-range forecaster who ever made regular predictions, whose work seemed to me to have an iota of common sense in it, was your old servant Dunn, [Mr. E. B. Dunn of the Weather Bureau office in New York, not Mr. Lawrence Dunne of Alabama] and I have never looked into his work enough to overcome my prejudices against it on general principles. My own experiments abundantly satisfied me, first, that long-range work as a steady plan of procedure was inoperative, and, second, impracticable unless mixed with guesswork, i. e., lying. You are welcome to use enough of this letter to right the error as regards myself, and, it may be, reaffirm your position, provided that you correctly state my ideas. While I have been requested to give a statement of my position through the columns of widely circulated neutral mediums, I would much prefer to convince those with whom I have long labored through the official organ which has done me an injustice, though by means of some unknown source of misconception, I have no doubt.

Having corrected, as above, the false impressions that seem to have been created, I will, as briefly as consistent, give the results of my investigations of practical long-range forecasting, which will, I think, reiterate your own private and expressed convictions. I will first state that I wrote the Chief of Bureau in the year 1903 asking if there was no way

in which a practical weather worker who had recently passed the age limit, but who had previously passed the meteorological examination by a good number of points, could enter the service, as by reexamination. I received a curt if not a courteous negative. [The Chief of Bureau can not change the rulings of the Secretary of Agriculture or of the Civil Service Commission.] Having the wish to do something of benefit to the community in the field to which I was most particularly adapted, I started a weather forecast business and found, among other things:

First. That the public wants long-range forecasts regularly, and

Second. That it is impossible to make any such with sufficient correctness. I doubt if a Weather Bureau official who has ever made one short-range forecast privately thinks it impossible to make a single long-range forecast. Even the MONTHLY WEATHER REVIEW occasionally hints at the backward extension of great atmospheric changes, lasting perhaps a week—just as the giving away of a dam would slant the level of the water with increasing velocity, beginning at the dam.

Third. The editor of one daily paper carefully studied my three-day forecasts, admitted they were as correct as could be expected for two days, and then wanted them to cover more time as thoroughly. I should recommend that such newspapers try to have Congress appropriate half as much more if they want three-day forecasts, and, still more if they want a few hours' notice given of "tornadoes." People who think it doesn't take money to save money by weather predictions must be ignorant enough to support goose-bone and other theories, including astrology, moonshine, and bombs.

Fourth. The editor of a second daily paper studied my work most carefully and has been writing me ever since to recommence it.

Fifth. Various other editors either wanted me to furnish such stuff very cheaply or else to make exciting predictions, or with impossible regularity, which would necessitate lying. I would not do anything of the kind, and naturally object strenuously to being classed among those who sacrifice honor for profit.

Sixth. The people generally throughout the region covered by the last "cold winter" expect another colder than the average. Here is a whole people making a long-range prediction. Can all the people fool themselves some of the time? Or could a specialist not make such a prediction?

Seventh. As the result of my work, leading reputable papers, etc., began having their own "three-day predictions." Where these have been justified they have been continued. If I proved my three-day predictions were as good or better than 83 per cent correct, why should the Civil Service rules absolutely exclude a man of thirty-five years from his country's service in his chosen and peculiar profession?

Eighth. That the Weather Bureau gets the credit for all such paid for work, where the furnisher does not get part pay in advertising. Thus, if the incog. work is good the Bureau is helped, and if bad, to use the A B C argument, the people relish it or they wouldn't support the paper in using it. When it is not incog., if it is good, it is a reflection on the Bureau for not having such men in its employ, and if bad it should carry its own condemnation. However, in my case, I furnished my own name for the editors to do as they saw fit with, and that leads me to remark:

Ninth. As the Weather Bureau is like the Government "of, for and by the people," can there be harm in discreet persons using it not only privately but publicly if honorably giving it due credit in their work? Wherever I have been the Weather Bureau officials have been helped, (and so the general service,) more than I, by the value of my work. Sensational predictions are almost never justified, though the Minnesota type of a West Indian tornado should have been heralded several hours in advance, if that would not have resulted in more deaths from fright than it would have prevented.

Tenth. An editor in Duluth, Minn., said that all weather predictions were injurious to his paper; if you predict fair the advertisers would have advertised any way, and if you predict rain they wouldn't advertise at all. That argument is about as old as the age of man.

Eleventh. I obtained the most peculiar assortment of ideas from editors from Chicago to St. Louis and Winnipeg, including all sorts of forecasting "from stocks to eternity." Confining myself strictly to weather, it seems that the people "as a whole" have got to be educated "up" to "long-range forecasts" before they can be satisfied with what few they can "gamble on," and the various newspapers who used these generally "kicked" if they couldn't dig out at least a terrible hailstorm or blizzard every time.

Twelfth. I established the great principle that the appearance of a cool wave within the field of observation is the surest sign of all weather changes in that field that short-range predictions can foretell. If I made that fact emphatically understood by those sufficiently conversant the result of my labor is a success.

So as I reluctantly abandoned trying daily long-range newspaper forecasts for that part of North America, preferring honor to money, I would deeply appreciate the favor if you can conveniently set me right again with your readers.

Sincerely,

ALTON D. ELMER.

METEOROLOGICAL COURSE AT WILLIAMS COLLEGE.

In response to an inquiry by the Editor we learn that Prof. Willis I. Milham, Director of the Field Memorial Observatory